IBM

BladeCenter: Blade servers

Blade technology | Why IBM BladeCenter | Competitive advantages

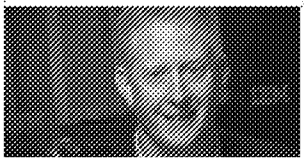
- **What are blade servers?**
- Affordable density
- Fast deployment
- Easy maintenance
- Modular scalability
- Flexible availability
- Technical ramifications

Slim, hotswappable blade servers fit in a single chassis like books in a bookshelf — and each is an independent server, with its own processors, memory, storage, network controllers, operating system and applications. The blade server simply slides into a bay in the chassis and plugs into a mid- or backplane, sharing power, fans, floppy drives, switches, and ports with other blade servers.

The benefits of the blade approach will be obvious to anyone tasked with running down hundreds of cables strung through racks just to add and remove servers. With switches and power units shared, precious space is freed up — and blade servers enable higher density with far greater ease.

Read on to learn more about this amazing advance in enterprise systems management.

IBM BladeCenter vs. HP



Vice President Doug Balog discusses the competitive advantages of IBM BladeCenter over HP.

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With a large number of high-performance server blades in a single chassis, blade technology achieves high levels of density. Even greater expansion is possible through option modules: performance and density are balanced, leveraging the infrastructure for optimum utility.

And all this performance and density are highly cost-effective. Increased density means fewer racks. Fewer components are duplicated. The number of cables is reduced dramatically; in some cases, switches and power distribution units are fewer too. Fewer components help add up to fewer items that can fail or need repair, and modular scalability helps spread capital equipment costs over time. Many day-to-day expenses — power and cooling requirements, assembly and installation hours, floor-space square-footage — are designed to be lessened by blade architecture.

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In blade technology, new servers are deployed by sliding blades in and out of a chassis. Each blade server connects to the infrastructure components in the chassis, so most blade-server designs require no plugging of multiple cables into each server as it is installed.

In advanced blade server systems, the software end of deployment is enhanced too. Slide a blade into a profiled bay — the system automatically loads a designated operating system and application image into the blade; the server is designed to get up and running with no human intervention. Or keep a hot blade waiting to be repurposed: under software control alone, the spare can replace a failing blade or help handle peak loads.

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All critical components of a blade server can be made redundant or hot-swappable, including cooling systems, power supplies, Ethernet controllers and switches, mid- and backplanes, hard disk drives and service processors. Removing a server for maintenance just means sliding the blade out of the chassis — it's no more complex than removing a hot-swap hard disk drive.

Advanced blade server systems offer smart ways of achieving highly sensitive maintenance. Some blade-server components can alert a systems management processor of impending failure hours or even days before failure occurs. Advanced diagnostics direct a servicer directly to a failing part, allowing for quick, efficient restoration. Some blade servers can even be designed to have no single point of failure.

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Blade servers are revolutionary in that they scale not up but out.

Adding a new server generally involves nothing more than sliding a new uni- or multiprocessor blade into an open bay in the chassis. The blade snaps in. Your infrastructure has expanded. Furthermore, option modules inside the chassis allow you to add shared features that once would have been attached externally. Blade technology's modular design makes scalability lightning fast.

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Blade technology is designed to help eliminate old limitations imposed by conventional server design, in which each server could accommodate only one type of processor.

Each blade in a chassis is really a self-contained server, running its own operating system and software. Sophisticated cooling and power technologies can therefore support a mix of blades, with varying speeds and types of processors. And this rapidly developing technology offers real investment protection for the future.

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Immediate, real-life benefits make blade-server technology an important contributor to an ongoing revolution toward on demand computing. Along with other rapidly emerging technologies (grid computing, autonomic computing, Web services, distributed computing, etc.), blade servers' efficiency, flexibility, and cost-effectiveness are helping to make computing power reminiscent of a utility service like electrical power — all you can use, whenever you need it.

New degrees of complexity, diversity, and growth require extremely sophisticated self-management, even self-optimization, across an entire infrastructure. Blade servers, easily clustered to increase power in smaller footprints, are designed to take on self-managing functions essential to the grid and autonomic computing models — especially key functions like workload management, dynamic provisioning and virtualization.